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09/805,792	03/13/2001	David L. Frank	P1504USA	2854

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EXAMINER	
MURPHY, RHONDA L	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/805,792	FRANK ET AL.	
	Examiner	Art Unit	
	Rhonda L Murphy	2667	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-24 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-24 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: Element "103" on page 7, line 12, shall be changed to "203".

Appropriate correction is required.

Claim Objections

2. Claim 4 is objected to because of the following informalities: Claim 4 shall be dependent upon claim 3, not claim 1. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Oberg (US 6,034,798).

Regarding claim 1, Oberg teaches a method of routing a communication transmission from a remote location to a central location comprising the steps of: a) providing a first plurality of adjacent communication nodes on a first network level (Fig. 1, group **4b** communication nodes represented by circles), the nodes forming a first group and having at least one first inter-level communication node (Fig. 1, group **4b**; inter-level

communication node shown as a rhombus and circle with double arrow) b) providing a second plurality of adjacent communication nodes on a second network level (Fig. 1, group **4c**), the nodes forming a second group and having at least second and third inter-level communication nodes (Fig. 1, inter-level communication nodes shown as a rhombus and circle with double arrow); c) routing the communication transmission through adjacent communication nodes in the first group on the first network level until the transmission reaches the first inter-level communication node (it is known in the art that routing occurs between nodes in order to transmit through the inter-level node); d) transmitting the communication transmission via the first inter-level communication node to the second inter-level communication node (it is known in the art that inter-level transmission occurs between two inter-level nodes); e) routing the communication transmission through adjacent communication nodes in the second group on the second network level until the transmission reaches the third inter-level communication node (as indicated above in letter c); and f) routing the communication transmission via the third inter-level communication node (Fig. 1, group **4a**; inter-level communication node shown as a rhombus and circle with double arrow) to the central location (group **4a**), via a fiber backbone (col. 2, lines 53-54).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oberg in view of Fischer (US 5,331,634).

Regarding claims 3 and 4, Oberg teaches routing between adjacent communication nodes and between network levels (Fig.1, col. 2, lines 12-14).

Oberg fails to teach routing via wireless transmission means, which comprise microwave connections based on licensed bands.

However, Fischer teaches routing via wireless transmission means comprising microwave connections based on licensed bands (col. 12, lines 61-66; col. 13, lines 12-17).

In view of this, having the system of Oberg and then given the teaching of Fischer, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Oberg, by incorporating wireless transmission means, so as to reduce cost and increase bandwidth capacity.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oberg in view of Coden (US 6,331,985).

Regarding claim 5, Oberg teaches groups of communication nodes on first and second network levels and routing between inter-level communication nodes to a central location via a third inter-level communication node.

Oberg fails to teach a network infrastructure based upon ATM technology.

However, Coden teaches a network infrastructure based upon ATM technology (col. 9, lines 49-51).

In view of this, having the system of Oberg and then given the teaching of Coden, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Oberg, by utilizing an ATM network so as to allow transmission flexibility and traffic aggregation.

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oberg in view of Mitts et al (US 6,671,283).

Regarding claim 6, Oberg teaches groups of communication nodes on first and second network levels and routing between inter-level communication nodes to a central location via a third inter-level communication node.

Oberg fails to teach each network level comprising a plurality of groups.

However, Mitts teaches a plurality of groups on each network level (col. 2, lines 1-6).

In view of this, having the system of Oberg and then given the teaching of Mitts, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Oberg, by including additional groups for each network level, in order to accommodate multiple groups existing within the network.

9. Claims 2,7–9,14–19,20,22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oberg in view of Norman, Jr. (US 6,452,931).

Regarding claims 2, 7,17 and 22, Oberg teaches groups of communication nodes on first and second network levels and routing between inter-level communication nodes to a central location via a third inter-level communication node.

Oberg fails to teach the second network level adapting to aggregate bandwidth from the first network level and a method wherein each group forms a self-healing network ring.

However, Norman teaches the second network level adapting to aggregate bandwidth from the first network level (Fig. 3, where elements **20** and **21** represent the first level and elements **22**, **23**, and **24** represents the second level, which receives flow from the first level). Norman also teaches groups forming a self-healing network ring (Fig. 3, col. 3, lines 42-46).

In view of this, having the system of Oberg and then given the teaching of Norman, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Oberg to allow the second network to adapt to aggregate bandwidth and include groups of self-healing rings, so as to provide a more reliable means of communication and flexibility between network levels.

Regarding claim 8, Oberg teaches a communications network comprising: a) a plurality of adjacent communication nodes interconnected by first communication links to form a plurality of adjacent ring-like groups (see Fig. 1); b) second communication links connecting at least one communication node from each group to at least one

communication node in the adjacent group (see Fig. 1); c) at least two input/output means located within each node (see Fig. 1); d) a network decision making means located within each node (it is known in the art that nodes are capable of making decisions), the decision making means in communication with the input/output means (it is known in the art that the decision making means and input/output means of the node are in communication with one another); and wherein the plurality of groups are divided into hierarchical network levels (Fig. 1, col. 2, lines 11-13, 53-54).

Oberg fails to teach each level comprising at least two groups and wherein each higher network level group has two inter-level communication nodes in direct communication to two independent inter-level communication nodes on lower level groups.

However, Norman teaches each level comprising at least two groups (Fig. 3, level one represented by elements **20** and **21)** and wherein each higher network level group has two inter-level communication nodes (elements **22** and **23)** in direct communication to two independent inter-level communication nodes on lower level groups (elements **20** and **21**).

In view of this, having the system of Oberg and then given the teaching of Norman, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Oberg, by including two inter-level nodes in communication with each other, in order to provide redundancy and an alternate pathway for communication between two network levels.

Regarding claims 9,14 and 15, Oberg further teaches a network comprising three input/output means located at each inter-level communication node (Fig. 1, inter-level communication node shown as a rhombus and circle with double arrow, with three input/output means); a network wherein each node has at least two paths into the network (Fig. 1) and each network component having a transmission latency time of approximately 3.0 msec (it is known in the art that the network component is capable of a latency time of approximately 3.0 msec).

Regarding claim 16, 19 and 20, Oberg teaches a method of designing a network comprising the steps of: a) providing a plurality of communication nodes (Fig. 1); b) dividing the plurality of communication nodes into a plurality of groups where each node is in contact with at least one adjacent node (Fig. 1, groups **4b** and **4c**); c) connecting the nodes within each group via a first transmission means (Fig. 1); g) interconnecting each of the groups on the lower level with a central location (Fig. 1, central location **4a**); d) dividing the plurality of groups into a plurality of hierarchical network levels (Fig. 1 network levels groups **4a**, **4b**, **4c**).

Oberg fails to teach the following limitations taught by Norman: d) dividing the plurality of groups into a plurality of hierarchical network levels (Fig. 3, elements **20**, **21** representing the first level; and **22**, **23** representing the second level); e) interconnecting the plurality of groups on each network level via a second transmission means (Fig. 3, link **30**) and the second transmission means is an intra-level communications link (Fig. 3, link **30**); f) interconnecting each of the plurality of groups on a higher network level with a specific group on a lower level via a third transmission means (Fig. 3, links **31**,

32); and the third transmission means is an inter-level communications link (links **31**, **32**); wherein each higher network level group has two inter-level communication nodes (elements **22** and **23**) in direct communication with two independent inter-level communication nodes on lower level groups (elements **20** and **21**).

In view of this, having the system of Oberg and then given the teaching of Norman, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Oberg, by interconnecting the groups via second and third transmission means and each higher network group having two inter-level nodes in communication with each other, in order to provide redundancy and an alternate pathway for communication between two network levels.

Regarding claim 18, Oberg further teaches the first transmissions means as intra-group communications links (Fig. 1; group **4b**).

Regarding claim 23, Oberg further teaches the communication nodes within a group is in contact with at least one adjacent node (Fig. 1; group **4b**, **4c**).

10. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oberg and Norman as applied to claim 8 above, and further in view of Fischer (US 5,331,634).

Regarding claims 10 and 11, the combined method of Oberg and Norman teach a communication network with groups divided into network levels with inter-level communication nodes.

Oberg and Norman fail to teach each node in wireless communication with an adjacent node and microwave connections based on licensed bands.

However, Fischer teaches each node in wireless communication with an adjacent node (Fig. 1, element **76**; col. 17, lines 1-3) and microwave connections based on licensed bands (col. 12, lines 61-66; col. 13, lines 12-17).

In view of this, having the system of Oberg and Norman and then given the teaching of Fischer, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Oberg and Norman, by incorporating wireless transmission means, so as to reduce cost and increase bandwidth capacity.

11. Claims 12,13, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oberg and Norman as applied to claim 8 above, and further in view of Coden (US 6,331,985).

Regarding claims 12, 13 and 21, the combined method of Oberg and Norman teach a communication network with groups divided into network levels with inter-level communication nodes.

Oberg and Norman fail to teach a communications network wherein the input/output means is a transceiver and the network decision making means is an ATM switch.

However, Coden teaches an input/output means as a transceiver (Fig. 11, ring transceivers **1102**) and an ATM switch for decision making (col. 9, lines 45-51).

In view of this, having the system of Oberg and Norman and then given the teaching of Coden, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Oberg and Norman, by including an input/output means as a transceiver, to provide transmit and receive capabilities within one device and reduce the need for additional hardware; and an ATM switch to decide optimal paths within the network.

12. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oberg in view of Annapareddy et al (US 5,602,839).

Regarding claim 24, Oberg teaches a method of restoring a self-healing network comprising the steps of: a) providing a first plurality of adjacent communication nodes on a first network level (Fig. 1, group **4b** communication nodes represented by circles), the nodes forming a first group and having at least one first inter-level communication node (Fig. 1, group **4b**; inter-level communication node shown as a rhombus and circle with double arrow); b) providing a second plurality of adjacent communication nodes on a second network level (Fig. 1, group **4c**), the nodes forming a second group and having second and third inter-level communication nodes (Fig. 1, inter-level communication nodes shown as a rhombus and circle with double arrow); c) routing a communication transmission to adjacent communication nodes on the first network level along the best path available (it is known in the art that the routing occurs along the best path available); i) transmitting the communication transmission via the first inter-level communication node to the second inter-level communication node (it is

known in the art that inter-level transmission occurs between two inter-level nodes); j) routing the communication transmission around adjacent nodes on the second network level until the transmission reaches the third inter-level communication node (it is known in the art the that routing occurs between nodes in order to transmit through the inter-level node); and k) routing the communication transmission via the third inter-level communication node (Fig. 1, group **4a**; inter-level communication node shown as a rhombus and circle with double arrow) to the central location (group **4a**) via a fiber backbone (col. 2, lines 53-54).

Oberg fails to teach the following limitations taught by Annapareddy: d) detecting a node failure (col. 7, line 7-8); e) identifying the component or communication link involved in the node failure (col. 7, lines 7-10); f) communicating between adjacent nodes to find the best available path (col. 6, lines 60-67); g) selecting the alternative route for the communication transmission (col. 7, lines 7-10); h) re-routing the communication transmission until the transmission reaches the first inter-level communication node (**320 is selected as the path to deliver the message from group 1 to group 2**).

In view of this, having the system of Oberg and then given the teaching of Annapareddy, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Oberg, by including node failure identification, communication of best available path, and re-routing, so as to provide the most optimal means of transmission without delays.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rhonda L Murphy whose telephone number is (571) 272-3185. The examiner can normally be reached on Monday - Friday 8:00 - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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